National Museum of African American History and Culture

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Smithsonian Institution

Purpose

“To help Americans remember, and by remembering stimulate a dialogue about race to help foster a spirit of reconciliation and healing.

To be a beacon for the nation that reminds us of what we were, what challenges we still face, and to point us toward what we can become”

Dr. Lonnie Bunch, Director
National Museum of African American History and Culture

History

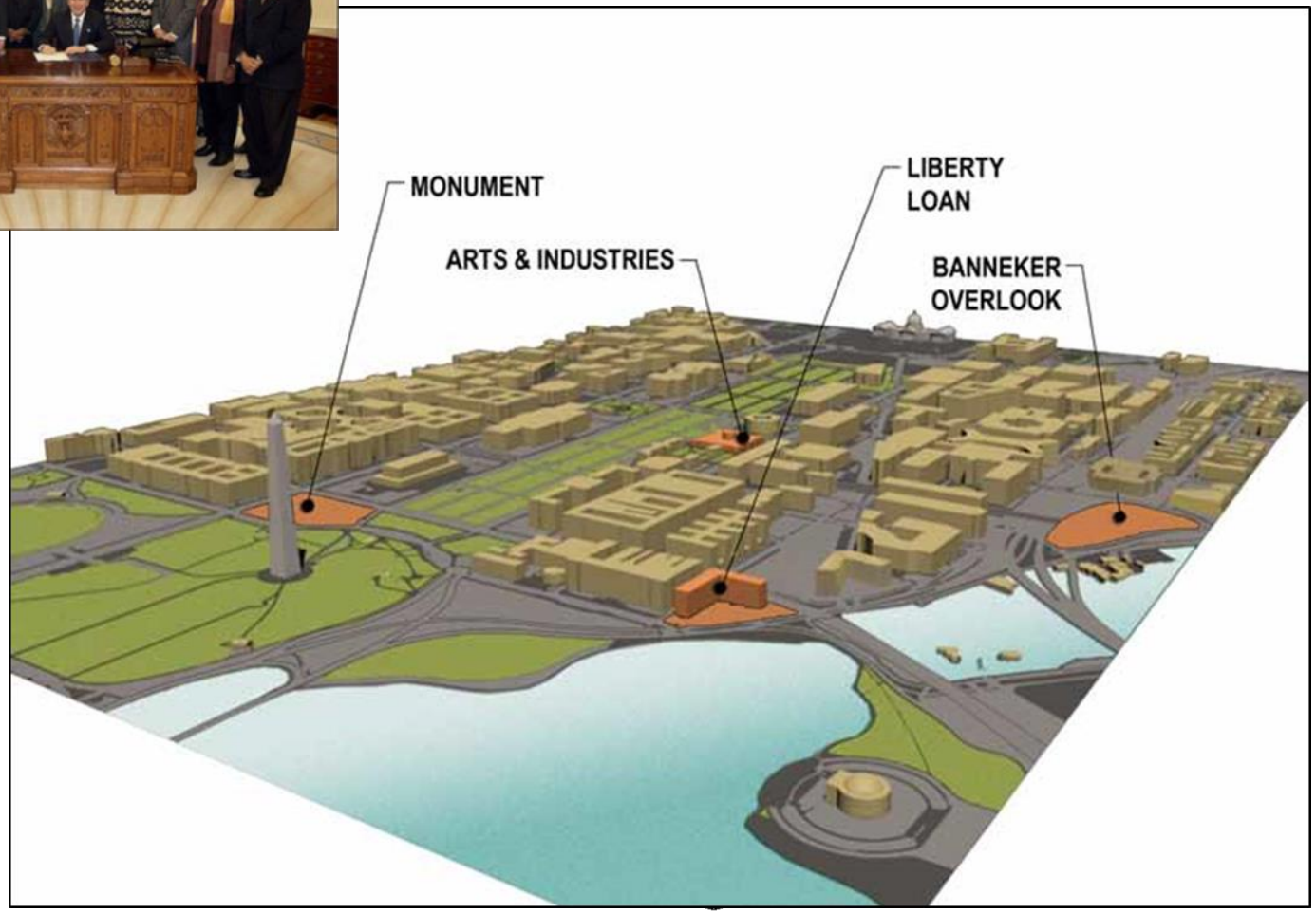
- 1865 – End of the Civil War

- 1915 – Civil War veterans

- 1965 – Voting Rights

History: Enabling Legislation

December 16, 2003

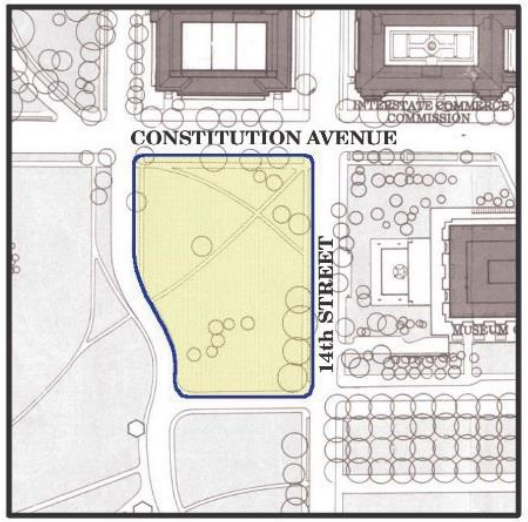


- Accommodation/Flexibility
- Urban planning context
- Project Cost/Constructability
- Compatibility; Visitation Potential
- Design opportunity/constraints
- Economic opportunities
- Access, Transportation, proximity
- Cultural & Historic Resources
- Environmental/Ecological Factors
- Safety, Security & Risk Management Factors
- Utilities

History: Site Selection

January 2006

- 2004: Smithsonian Institution Board of Regents appoints a 19 member National Museum of African American History and Culture Council
- March 2005: Dr. Lonnie bunch is named Director of the National Museum of African American History and Culture
- January 2006: The Board of Regents selects the Monument Site for the new Museum.



Smithsonian Institution

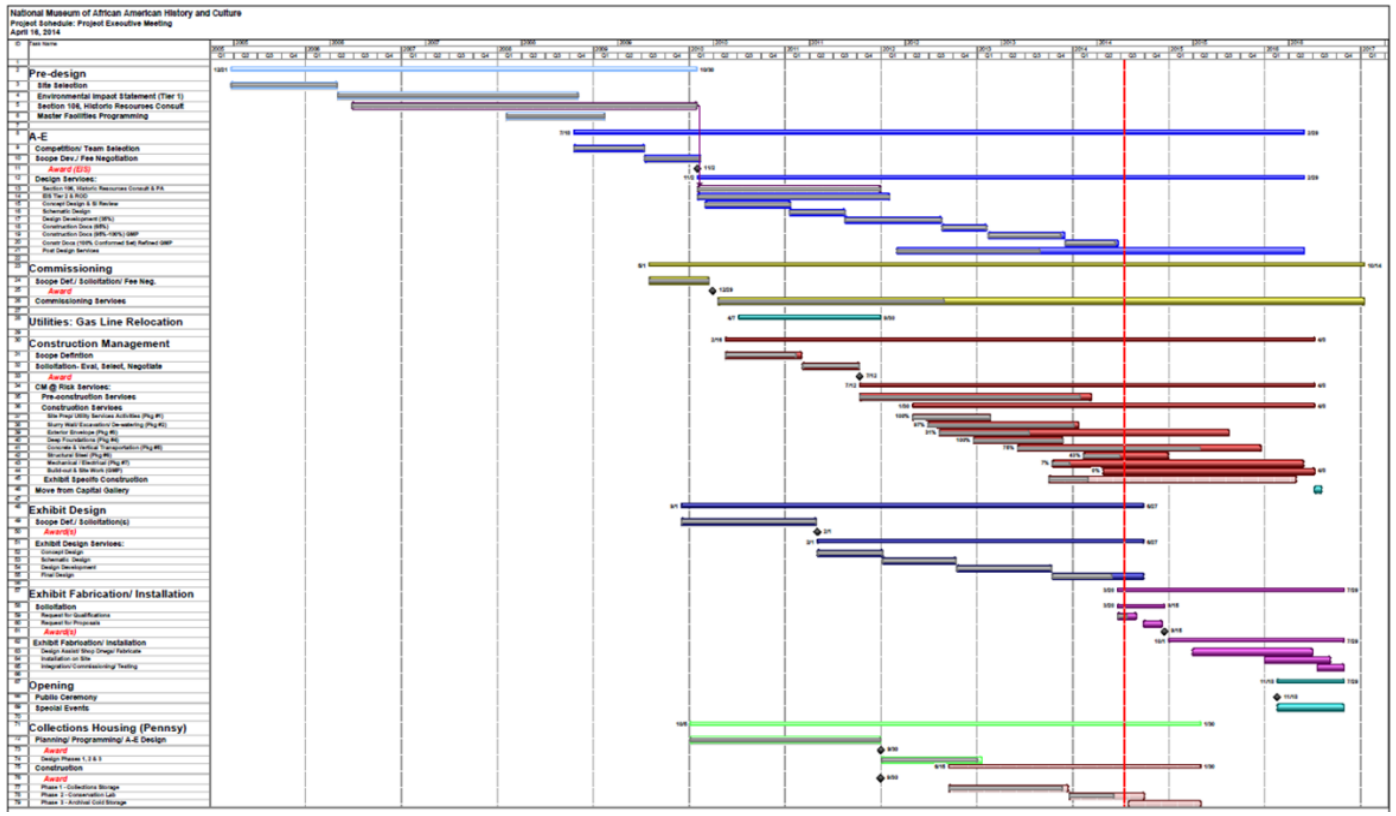
Early Planning Efforts: Budget

2003 - 2015

- Enabling legislation stipulated 50% federal and 50% non-federal funds
- Council starts fundraising efforts
- Budget: $540M
  - $270M Federal appropriations from FY2005 through FY2015
  - $270M Trust fund contribution
  - Includes:
    - Planning and Design
    - Construction and Construction Management
    - Commissioning
    - Exhibit Design and Fabrications

Early Planning Efforts: Schedule
2006

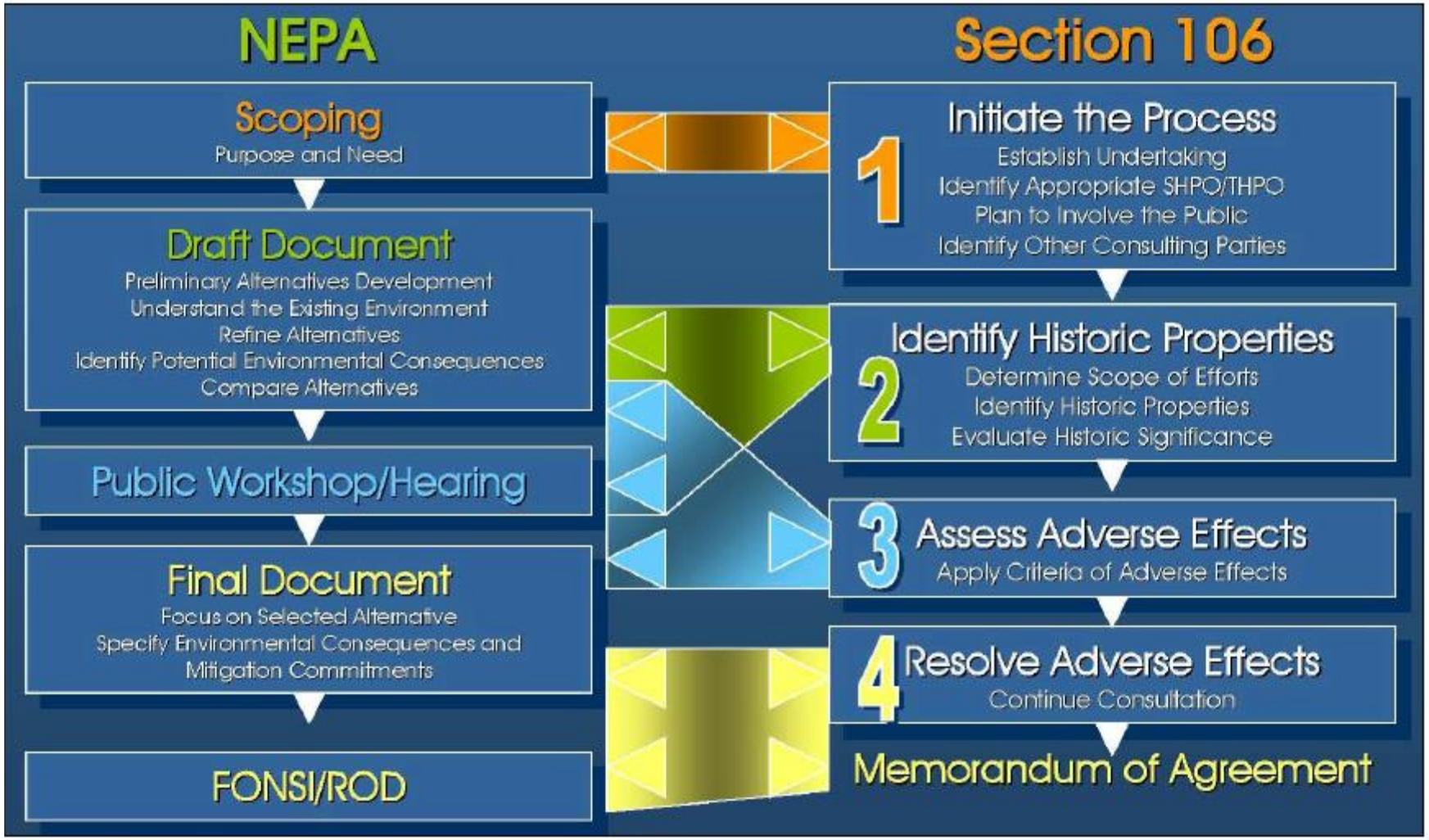
- Goal: Opening 2015
- Concurrent Activities:
  - Public Consultation
  - Historic Preservation Reviews
  - Environmental Impact Statement
  - Building a Collection
  - Master Facilities Planning
  - Exhibit Programming
  - AE Competition and Selection
  - Building Design
  - Gas Line Relocation
  - Selection of Constructor-CM@Risk
  - Construction
  - Commissioning
  - Exhibit Design
  - Exhibit Fabrication and Installation
  - Off-Site Collection Facilities



Early Planning Efforts: Public Consultation Begins

2006

Early Planning Efforts: Historic Preservation and EIS
2006 - 2011



Early Planning Efforts: Public Engagement

2006

Public Engagement

with Stakeholders and General Public

- American Association of Museums
- Organization of American Historians
- National Association of Counties

Early Planning Efforts: Collections Building

2007 - 2008

PRE-DESIGN: Programming

2007- 2008

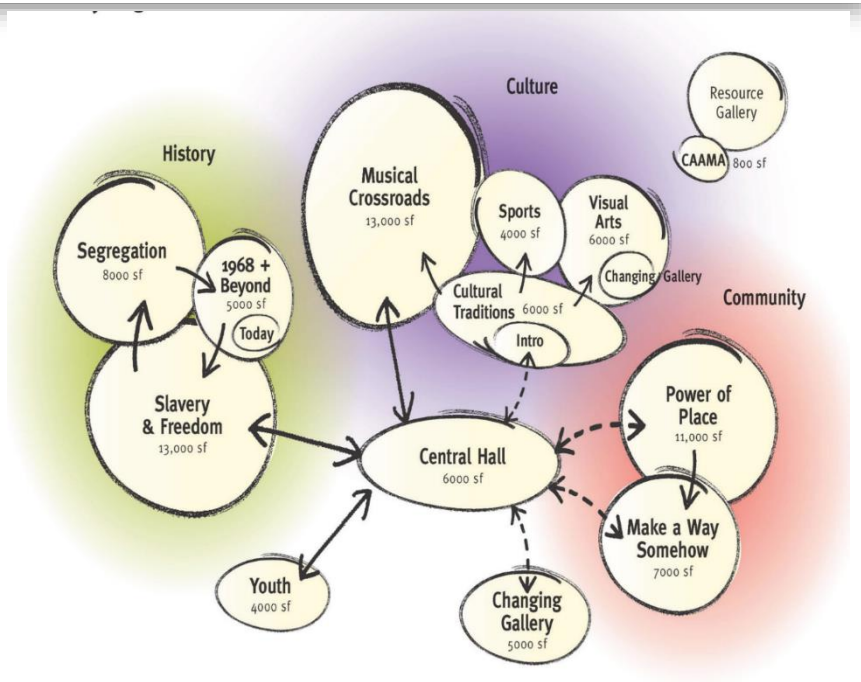
Master Facilities Programming:

- People
- Collections
- Facilities

Freelon Bond: The Freelon Group, Davis Brody Bond, Lord Cultural Resources and Amaze Design

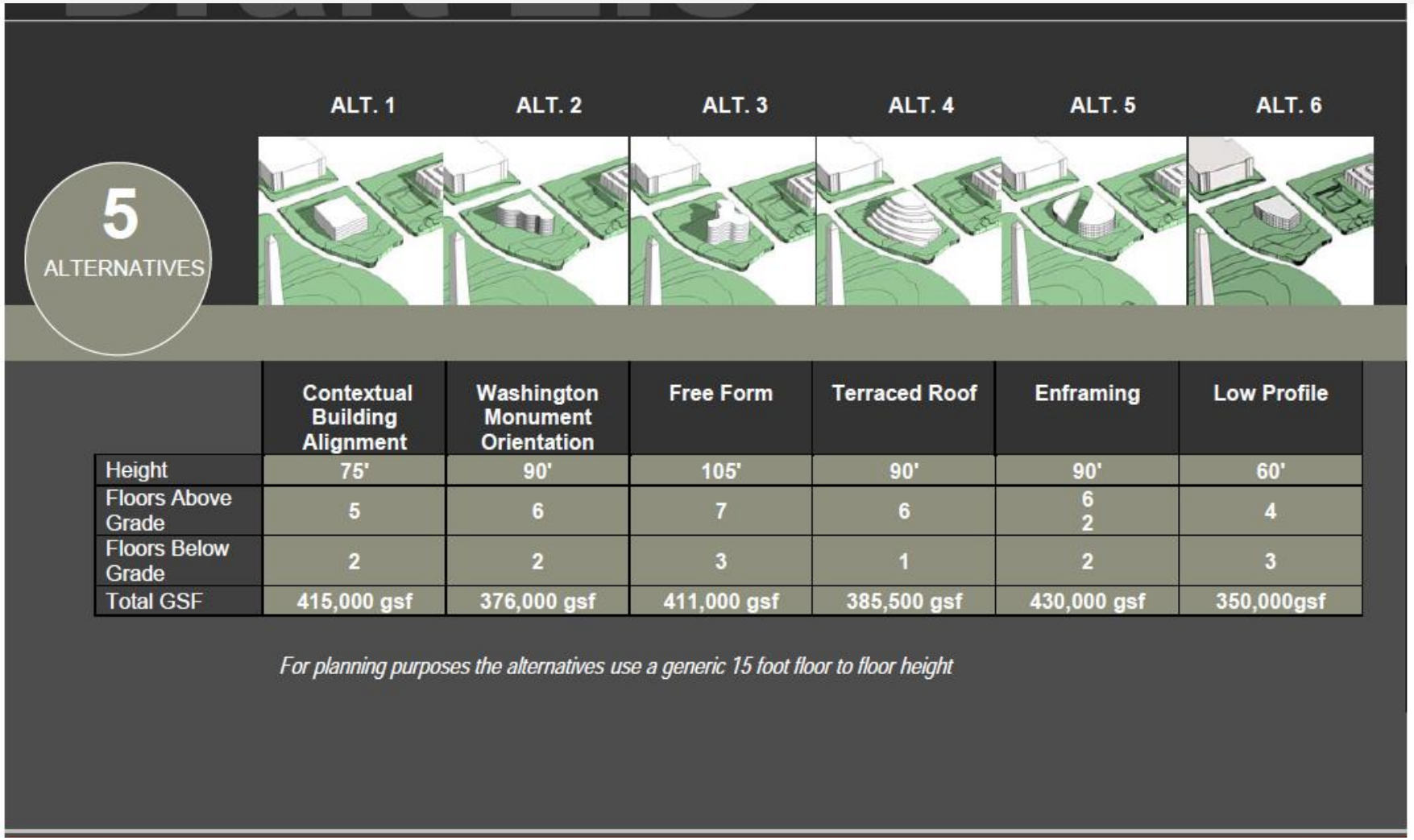
Responsible for:

- Visitation Estimates
- Audience Research
- Public Engagement and Outreach
- Exhibition Master Planning
- Collections and General Museum Requirements
- Site Analysis
- Facilities Program



PRE-DESIGN: EIS Tier 1 - Design Alternatives

2007- 2008

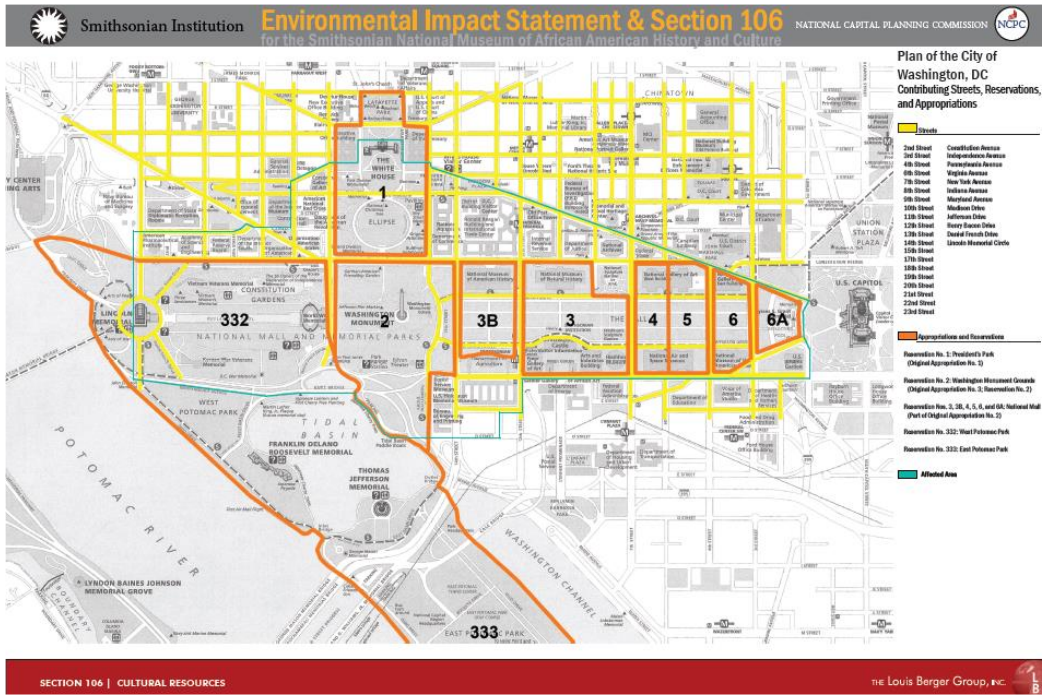


	Contextual Building Alignment	Washington Monument Orientation	Free Form	Terraced Roof	Enframing	Low Profile
Height	75'	90'	105'	90'	90'	60'
Floors Above Grade	5	6	7	6	6 2	4
Floors Below Grade	2	2	3	1	2	3
Total GSF	415,000 gsf	376,000 gsf	411,000 gsf	385,500 gsf	430,000 gsf	350,000gsf

For planning purposes the alternatives use a generic 15 foot floor to floor height

PRE-DESIGN: EIS Tier II & Section 106

2008 - 2011



Over 5 years of Consulting Parties and Agency Meetings
Development of Design Principles to Guide design
Sensitivity to Urban Context
Mall Context
Washington Monument Context
Archeology and Photo Documentation completed

Results:

- Size of Building above ground; 216'x216'
- Height of Building < Commerce Building
- Setback increased to the South for Monument view while respecting McMillan setbacks
- Site/Landscape; fluid movement across site
- Pavilion on a glass base for at grade views
- Corona, porch, water feature designs and materials refined

PRE-DESIGN: Design Competition

2009

"We are not building the Model"

- 60% Design
  Demonstrated understanding of mission, design principles and physical design parameters, program, building technology, security and sustainability.

- 40% Teamwork
  Design process, methodology collaborative process and contribution of all team members.

PRE-DESIGN: Design Competition

2009

Devreaux and Purnell

Freelon Adjaye Bond/SmithGroup

Diller Scofidio Renfro

Moody Nolan/Antoine Predock

Foster and Partners

Safdie Architects

Smithsonian Institution

DESIGN: Design Selection

2009

Place of Inspiration reflecting African American Resiliency and Spirituality

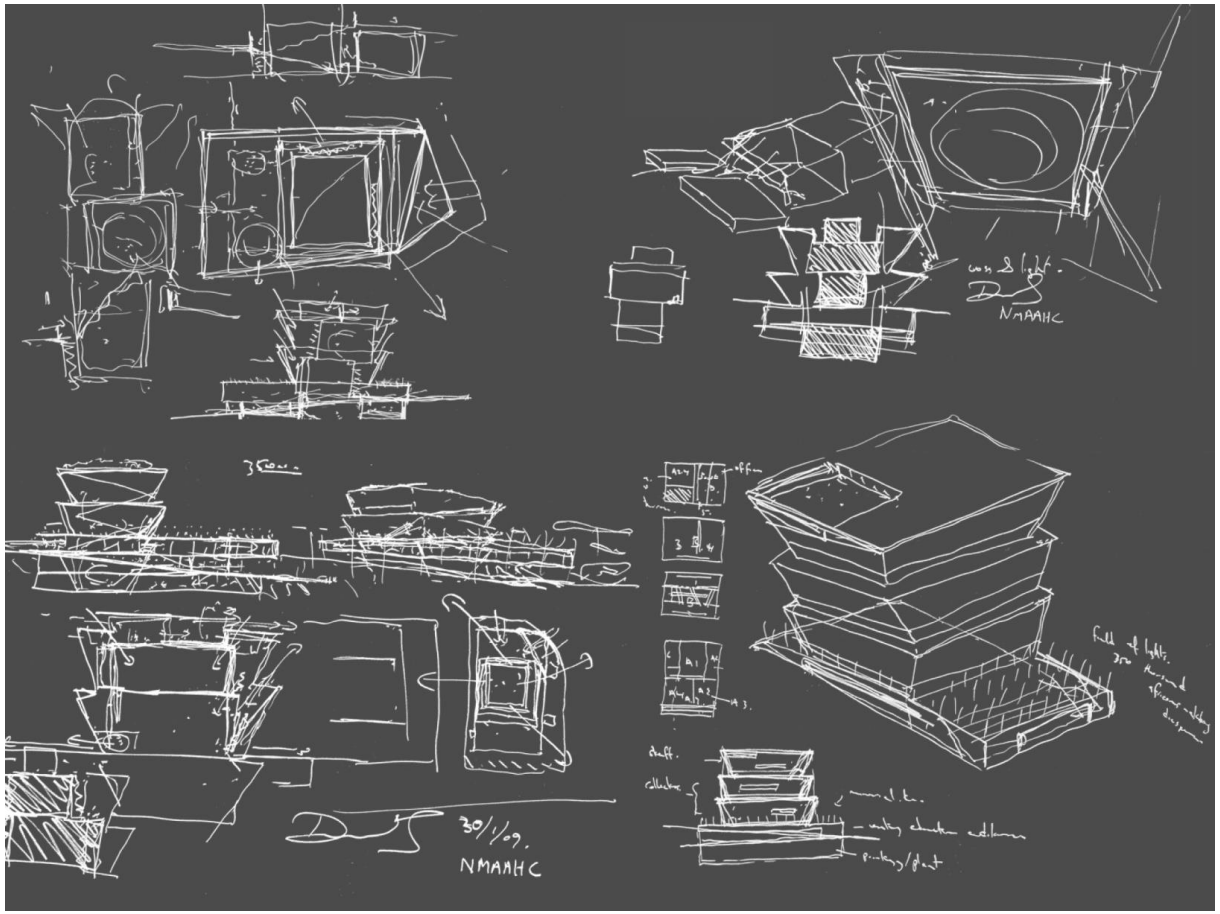
Three Irreducible Elements: Corona
Porch
Color/Materiality

Four Pillars: Learning
American History
International Considerations
Collaboration

Smithsonian Institution

DESIGN: Design Concepts

2010



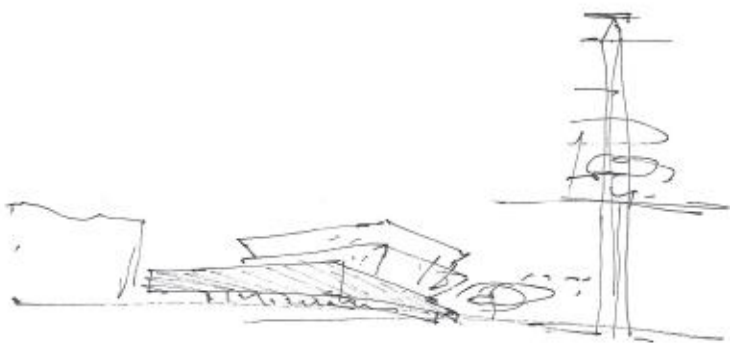
Starts:
January 2010

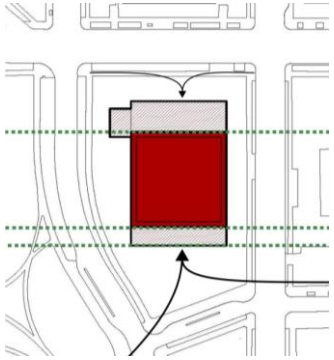
Presentations
to Agencies:
2010 - 2011

Approval of
Concept
Design:
March 2011

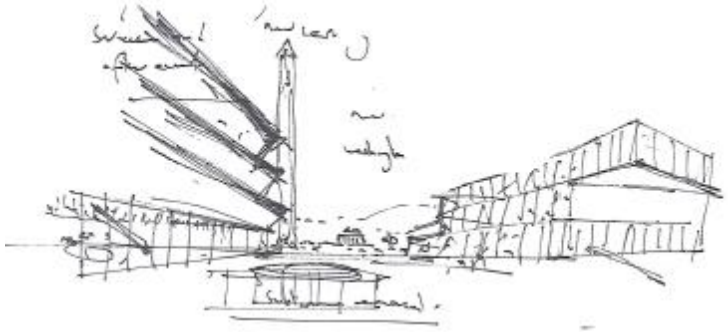
DESIGN: Design Alternatives

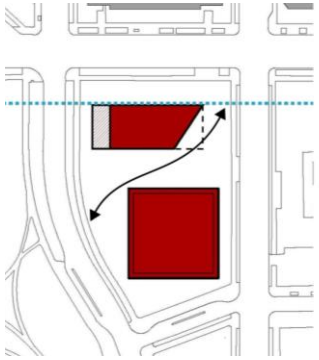
2010 - 2011



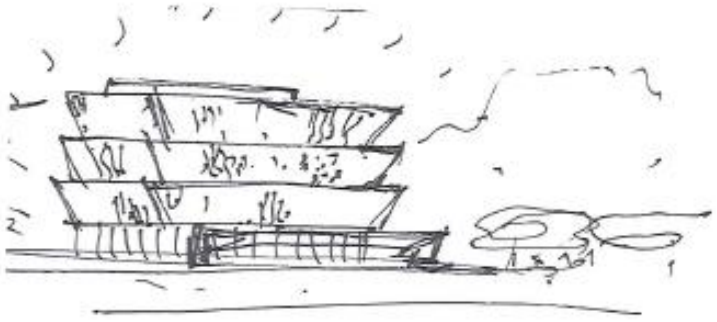


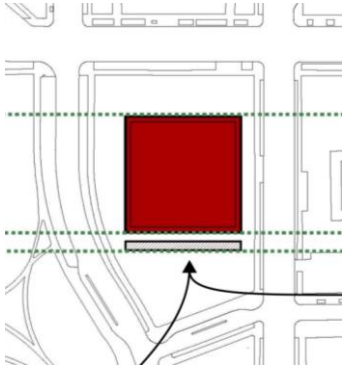
The Plinth



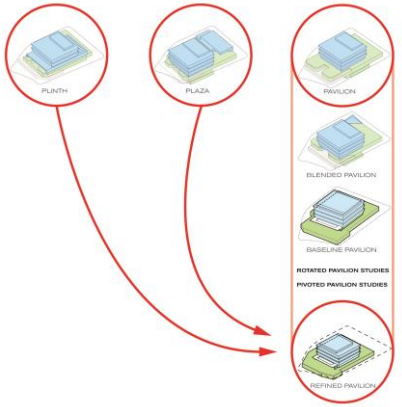


The Plaza



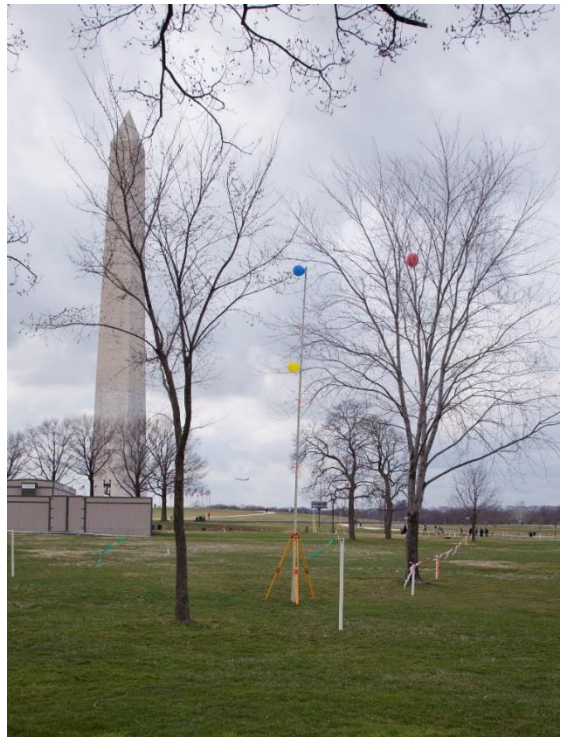


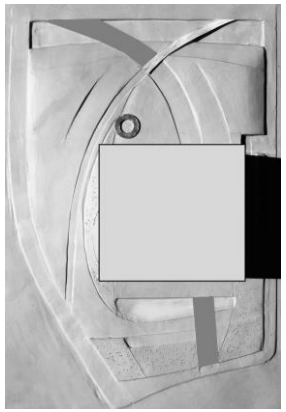
The Pavilion

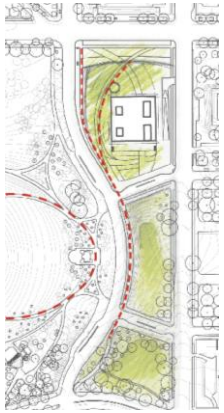


DESIGN: Site Studies: CFA, NPS

2010 - 2011







DESIGN: Structure

2010 - 2011

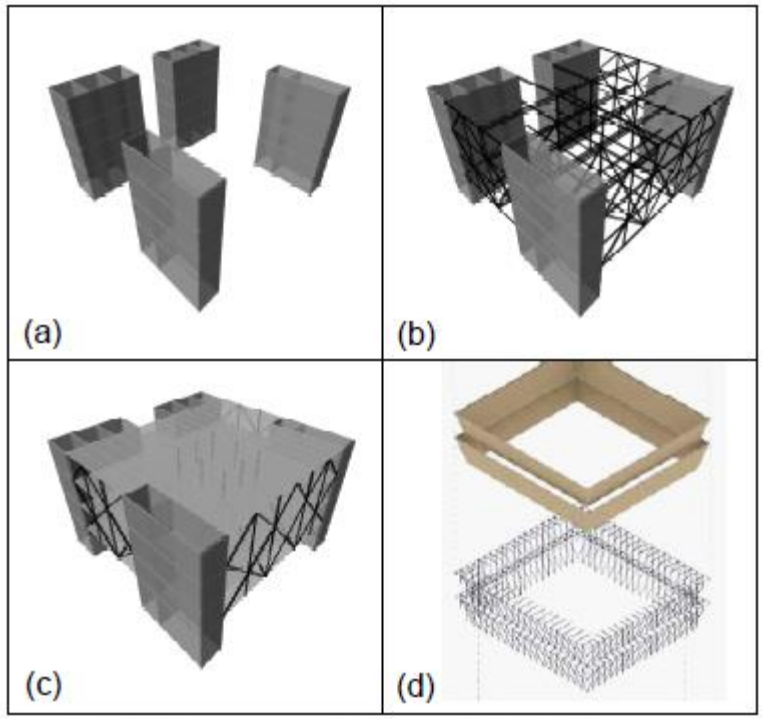


Figure 1 Primary components of corona structure in all three schemes

Main Elements:

- Four Pillars (4 Cores)
- Deep steel trusses spanning between the four cores in the corona
- Corona floor framing and slabs supported by the deep steel trusses
- Façade structure supported at roof level
- Two below-grade floors
- Foundations
- Materials: Steel above grade and Concrete below

DESIGN: Sustainability

2010 - 2011

Sustainability “is not a line item”

Main Goal:

1. Passive Design
2. Maximize potential of Corona –
3. Develop a comprehensive water management strategy
4. Understand energy drivers for the Museum
5. Specify simple systems that can be maintained efficiently (geothermal later explored but discarded).
6. Use daylight

Obtain LEED GOLD at a Minimum!!

DESIGN: Landscape

2010 - 2011

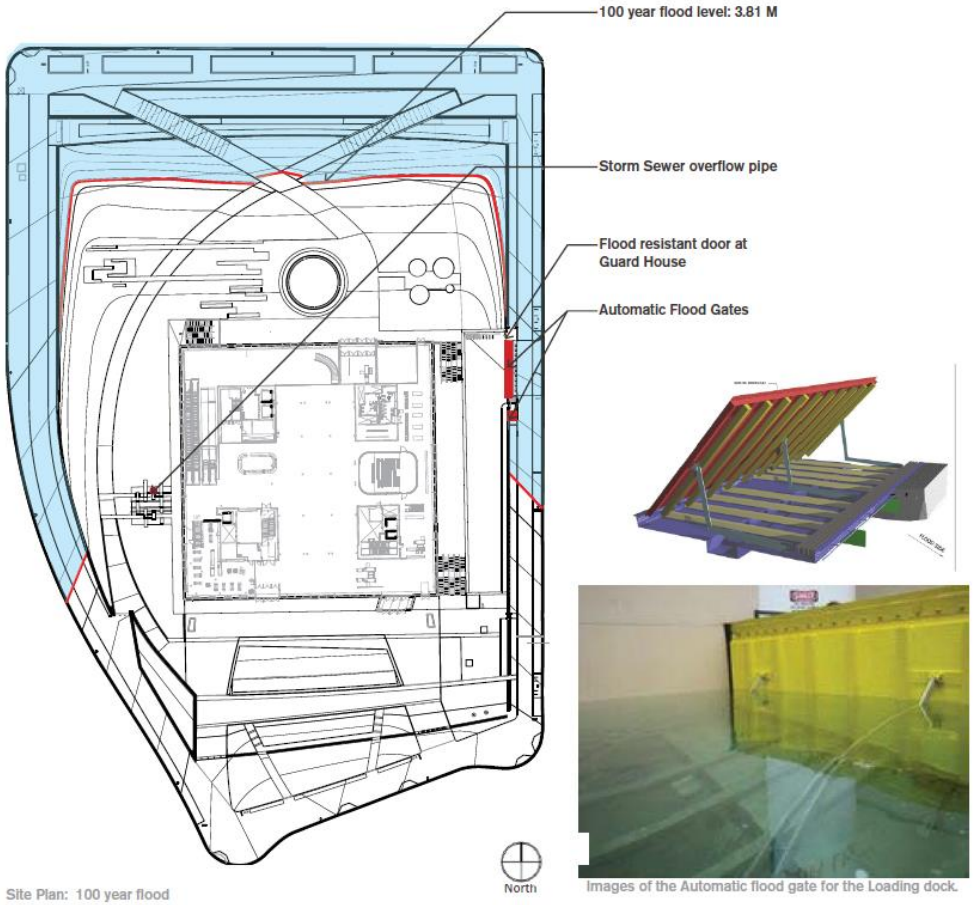
Hardscape Gatherings in the Landscape

Shrubs and Perennial Plantings

Views approaching Constitution Avenue from 14th Street

DESIGN: Flood Control

2010 - 2011



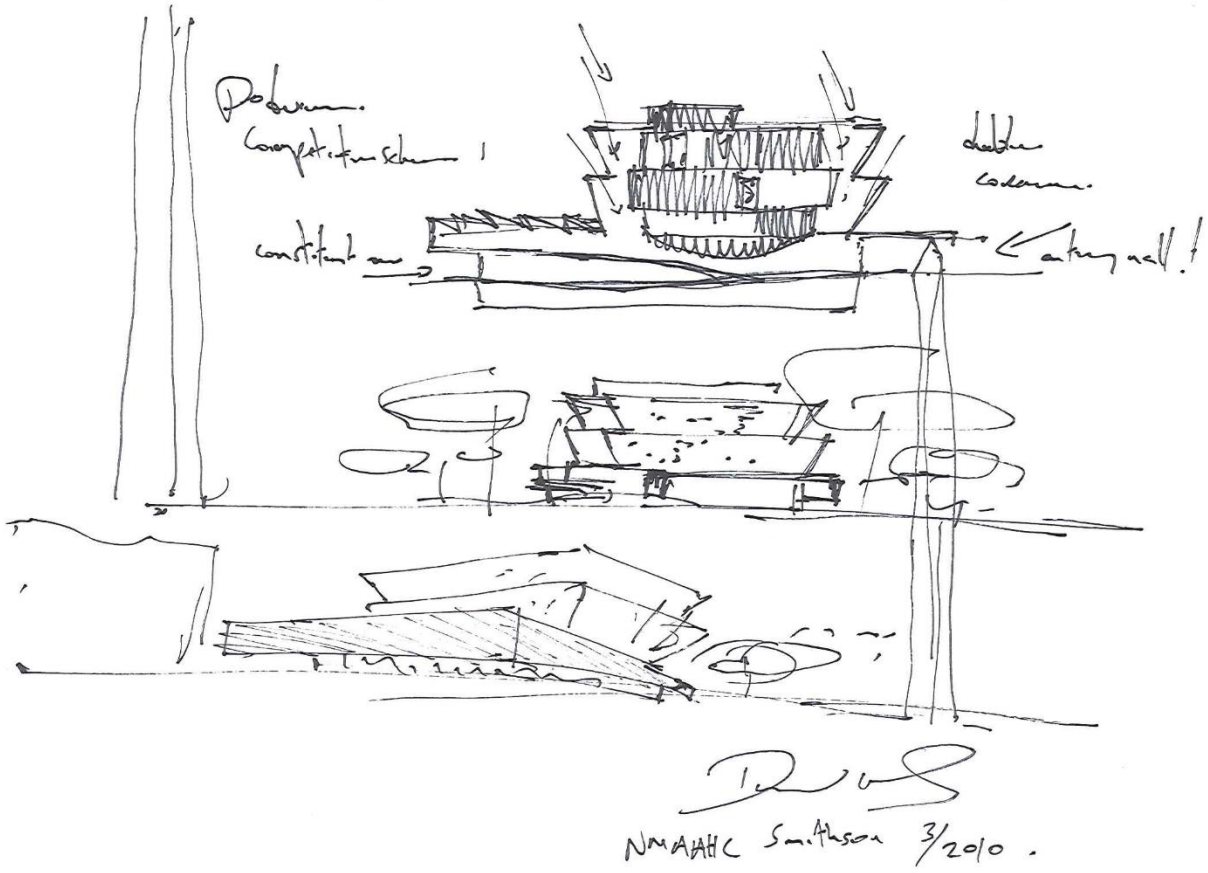
Site Plan: 100 year flood

Images of the Automatic flood gate for the Loading dock.

Years Later:
Final Installation

DESIGN: Presentations to CFA and NCPC

2011



CHALLENGES: Schedule, Funding and Appropriations

2005 - 2015

Schedule:

Opening Date established: November 2015

Funding:

First Federal Capital appropriation 2005
Last Federal Capital appropriation 2015
Continuous Fundraising in unpredictable amounts

Challenge:

Find Construction Delivery Method that would allow us to meet the schedule and meet commitments to the Contractor

Solution:

Design team to provide Construction Documents in packages to accelerate schedule and correspond to the funds available.

CHALLENGE: Construction Delivery Methodology

2010 - 2011

Project Delivery System Matrix			
Contract Vehicle	Positive Attributes	Negative Attributes	Mitigation Strategies
Design Build	Eliminates most errors and omissions	Owner does not have 100% control of the	Provide a good set of design
	Faster design (subcontractor input)	design of the project	criteria and standards
	Facilitates fast-tracking (fastest del.)	Owner does not have control of the fix	Req. DB to submit a systems
	Facilitates early procurement of long lead	to deal with errors and omissions	narrative with proposal
	Items	DB has incentive to reduce quality to gain	Limit the amount of shared
	Single source of responsibility (Adm)	additional savings	savings
	Greatest flexibility for changes		Aggressive QA by owner reps
	Better integration of proprietary systems		Req. BIM
	Under a GPM - greatest flexibility for cost		Adequate contingency funds
	and budget management		
	Incentives to deliver the project below cost		
	(guarantee maximum price / share savings		
	clauses)		
	Partnering relationship		
CM at Risk	Reduces errors and omissions	Limited or no opportunity for fast tracking	Req partnering sessions
	Predictable project costs	Limited flexibility	Req. ADR
	Flexibility to pursue a design - bid - build	Some owner responsibility for errors and	Req. BIM
	strategy	omissions	Adequate contingency funds
	Some incentive to deliver the project	Limited subcontractor input in design	
	below cost (GMP -shared savings)		
	Owner has 100% control of design		
	Owner has control of fix to deal with		
	errors and omissions		
	Partnering relationship		
	Faster project delivery (no sol.for GC req.)		
Design Bid Build	Most prevalent (traditional delivery)	Owner responsible for errors and omissions	Req.partnering sessions
	100% control of design	Little flexibility	Req. ADR
	100% control of fix for design errors and	Little opportunity for fast tracking	Provide for independent peer
	omissions	No integration of proprietary systems	review of the design documents
	Predictable initial project costs (fixed)	Adversarial relations (greater adm)	Req. BMI
		No subcontractor input in design	Adequate contingency funds
		Little opportunity for early purchase of long	
		lead items	
		Longest project delivery	

CHALLENGE: Construction Delivery Methodology

2010 - 2011

We also looked at:

- Integrated Project Delivery (IPD) – Contracting Issues

Participated in Forum through Associated General Contractors

Conducted surveys with other owners and owners' reps, and selected:

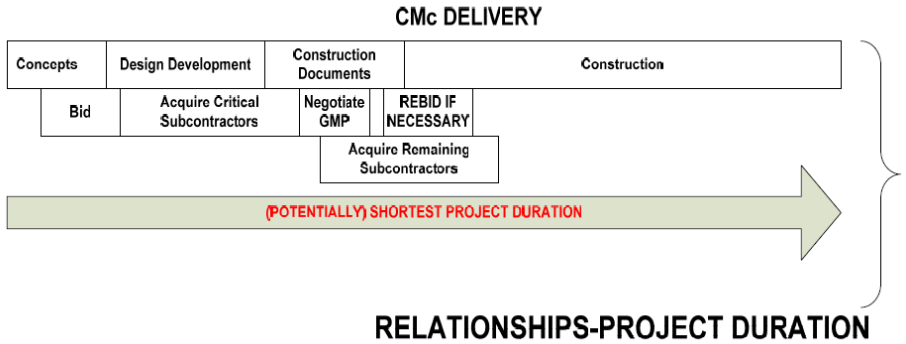
- Construction Management at Risk (CMc)
  - Construction Manager takes risk of building the project
  - A-E remains under separate contract to the Owner
  - Overlapping phases

Analyzed methods and risks based on Smithsonian past experience as well as that of other agencies/owners

CONSTRUCTION: CMc@Risk

2010 - 2011

- Schedule Advantage:
  - CMc Delivery:
    - Start late 2012
    - End late 2015/early 2016
  - Design/Bid/Build Delivery:
    - End-to-end design: complete late 2013
    - Construction complete 2017
- Cost Control:
  - Pre-Design Services and Reviews
  - GMP
  - Schedule/Cost Control



CONSTRUCTION: CMc @ Risk Selection

2010 - 2011

CMc @ Risk Delivery:

- Issue Concept Design with RFP
- CM selected through “best value” process
- Initial awarded for pre-construction services
- Cost verification for Concept Design
- Multiple package fast track delivery
- Shared savings provision
- Clark Smoot Russell contracted, 2011

DESIGN & CONSTRUCTION: Schedule Check-Up
2011

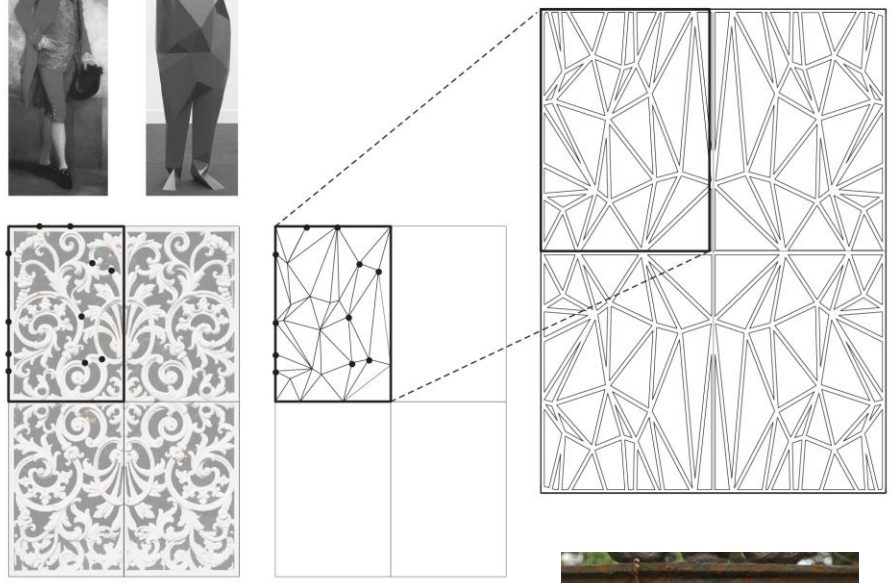
- January 2010: Concept Design Start
- October 2010: Submission of Concept to SI
- November 2010: Schematic Design Starts

Site Acoustic Reports, Groundwater Sampling Reports, etc.

- January 2011 – 65% SD Docs for CxAgent
- March 17, 2011 First Design Package and Concept Approval by CFA/NCPC
- April 1, 2011 – Schematic Design Submission to SI

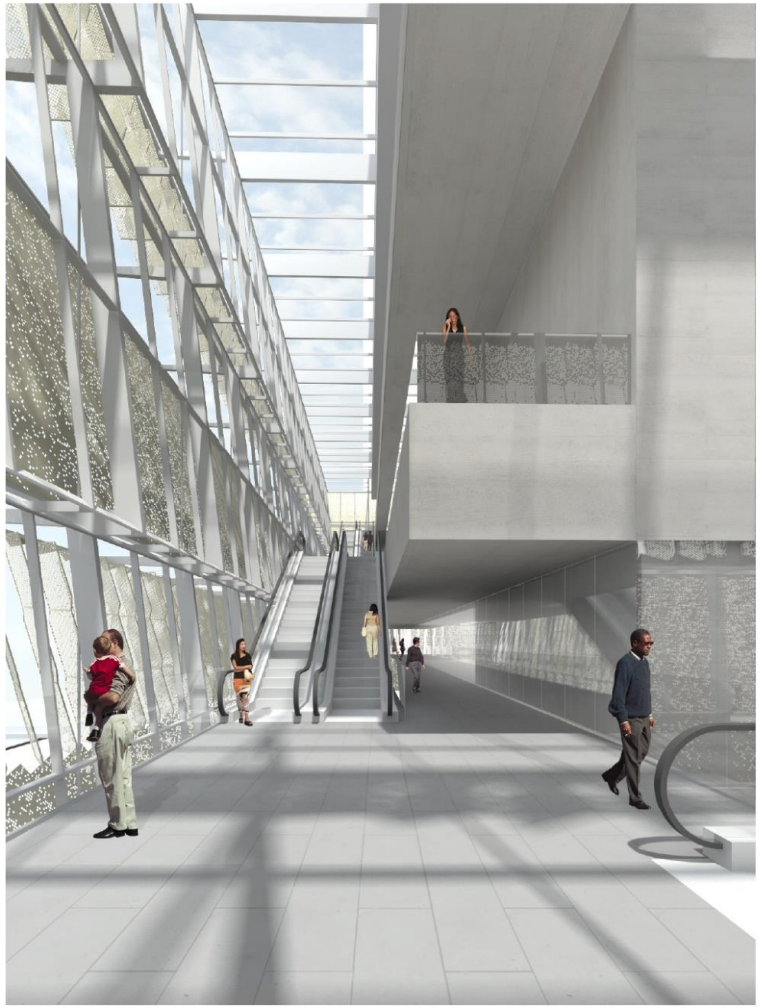
DESIGN: Corona

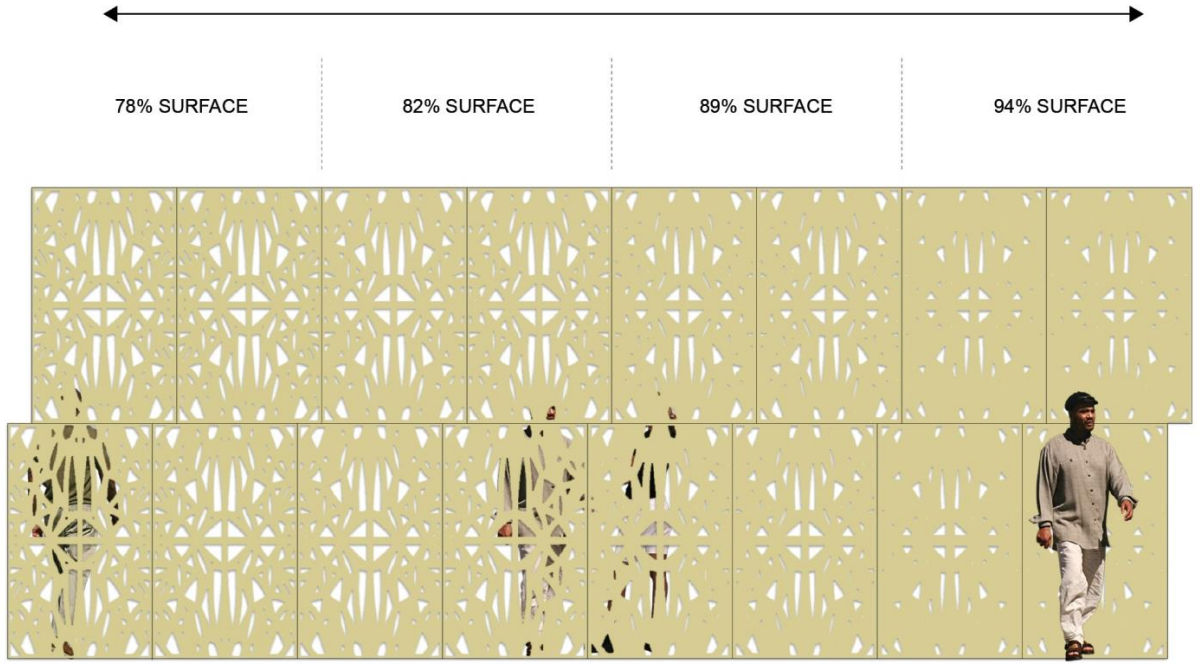
2011



DESIGN: Corona

2011

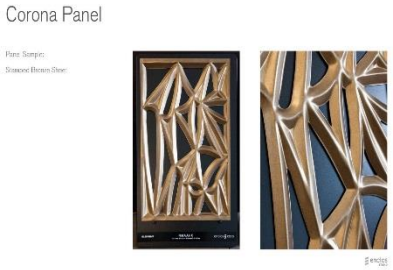




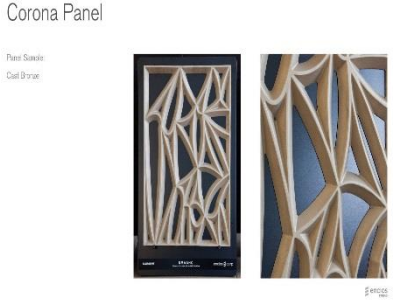
CHALLENGE: Design Assist for Exterior Enclosure
2012

- Design assist evolution - panels:

- Ultra high performance concrete (UHPC)



- Stamped metal



- Cast bronze

Cast aluminum with PVDF finish

CHALLENGE: Design Assist for Exterior Enclosure

2012

- Reflectance
- Material
- Weight
- Maintenance

Smithsonian Institution

CHALLENGE: Design Assist for Exterior Enclosure

2014

"Custom Artisan PVDF Panel Finish"

Commission of Fine Arts & National Capital Planning Commission final approval March 2014

EXHIBIT DESIGN: Selection of Exhibit Designer

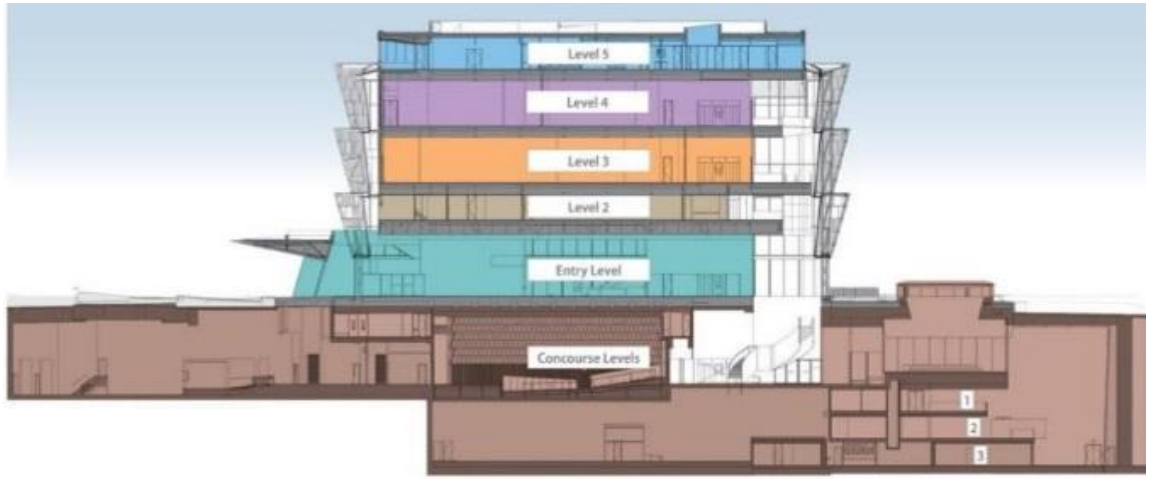
2011

Scholarly Advisory Board

- Engagement of Exhibit Designer: Ralph Applebaum
- The Museum acquires a Jim Crow Railroad Car
- Collaboration between David Adjaye and Raph Applebaum begins, and
- In July 2011, a new Concept for the History Galleries is born…

CHALLENGE: History Galleries
2011

- April 2011 Schematic Design Complete
- July 2011 New Concept for History Gallery



- Excavation extends to 70’ below grade
- Redesign of Foundation and Sub-grade Exterior Envelope
- Location and Protection of Railroad Car and Angola Prison Tower

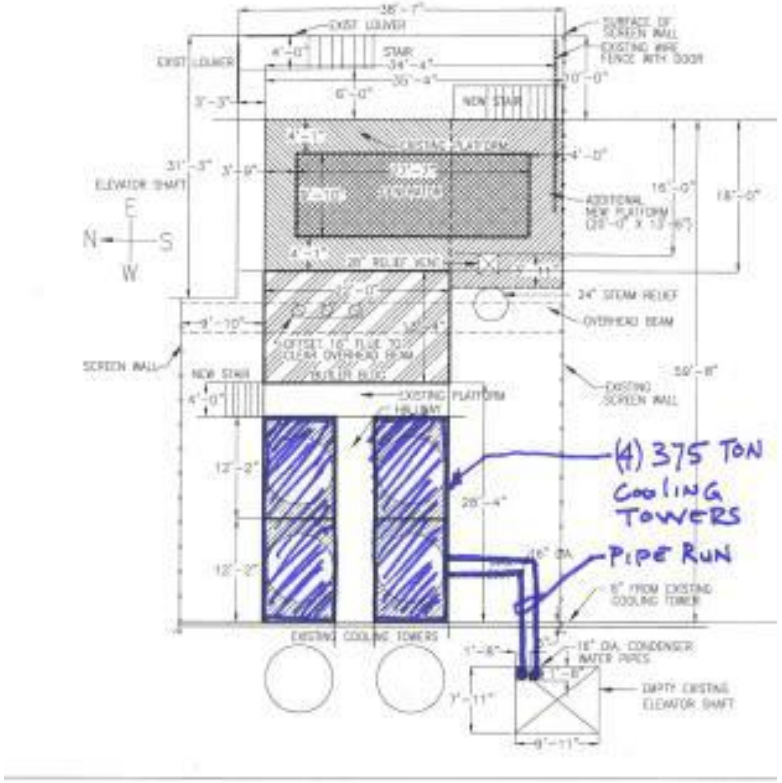
CHALLENGE: Relocation of Gas Line

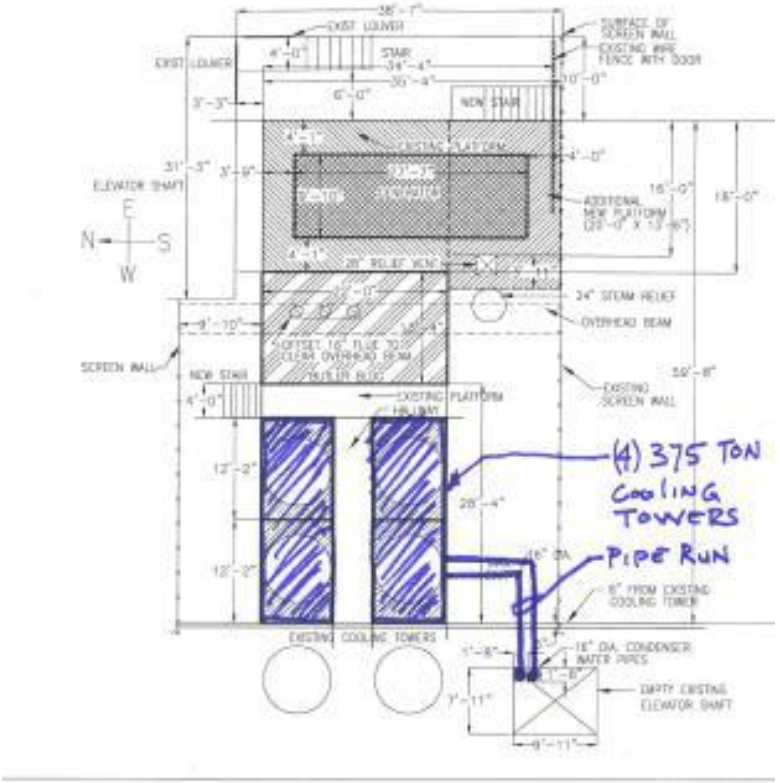
2011

Site Preparation: Relocation of major gas line

CHALLENGE: Relocation of Cooling Towers

2011





- Studies to share NMAH capacity

DESIGN & CONSTRUCTION: Schedule Check-Up

2011

- April 1, 2011 — Schematic Design Submission to SI
- Jan 2012 — Site Utilities Package # 1
- Feb 2012 — Groundbreaking Ceremonies
- April 2012 — Support of Excavation Wall/Excavation Package #2
- April 2012 — 35 % Design Submission
- May 2012 — Exterior Enclosure Design-Assist Package #3
- June 2012 — Deep Foundation Piles Package #4
- Sept 2012 — Concrete and Vertical Transportation Package #5
- Sept 2012 — 65% Construction Documents
- Jan 2013 — Structural Steel Package #6
- Mar 2013 — MEP/FP Package #7
- Aug 2013 — 100% CDs Complete
- Jan 2014 — Exhibit Specific CDs 100% Complete
- Jan 2014 — Interior Build-out & Site Work Package (GMP) #8
- Feb 2014 — Conformed Set

CONSTRUCTION: Site Utilities Work Begins

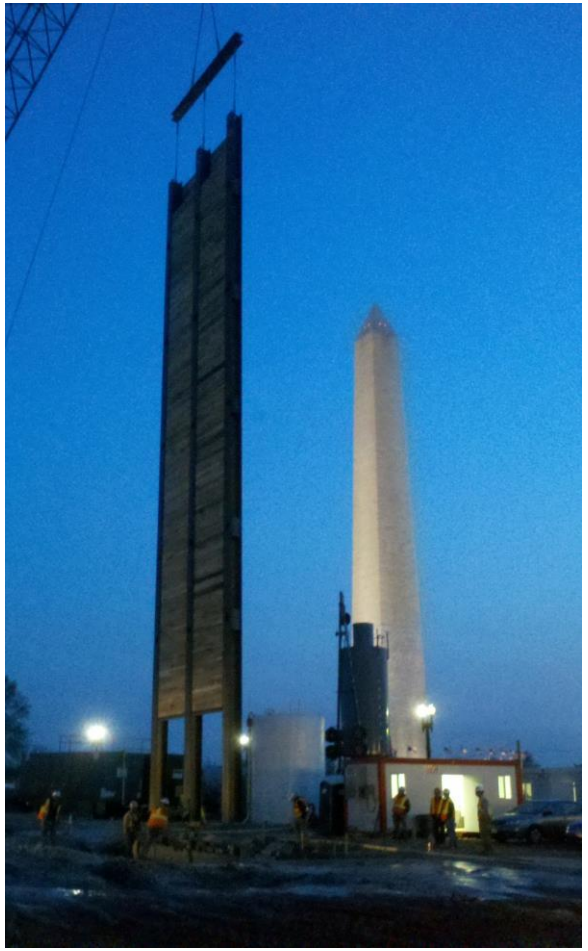
January 2012

Groundbreaking!
February 2012

- *February 22, 2012: President Barack Obama speaks at the Groundbreaking Ceremony with former First Lady Laura Bush, Smithsonian Secretary G. Wayne Clough, First Lady Michelle Obama, and NMAAHC Director Lonnie Bunch*

CONSTRUCTION: SOE Wall and Excavation

April 2012



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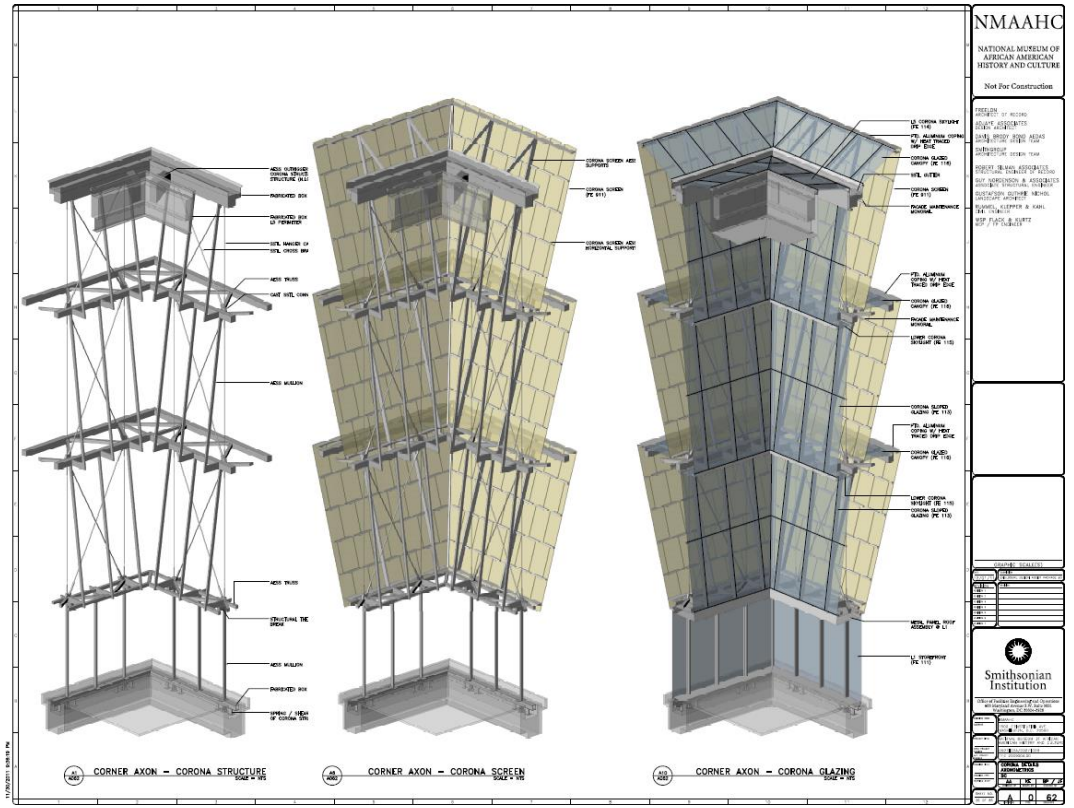
CONSTRUCTION: Design Assist for Exterior Enclosure

April 2012

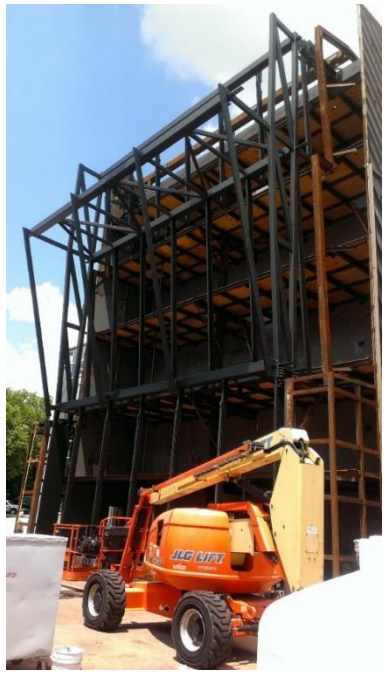
- Exterior Enclosure was identified early as a long lead system for early procurement. It consists of:
  - Structural framing
  - Corona screen
  - Curtainwall system
- Design Assist for the exterior enclosure was incorporated in both the Design and Construction Contracts
- Design provided “intent” documents before 35%
- Issued to CMc for best value selection

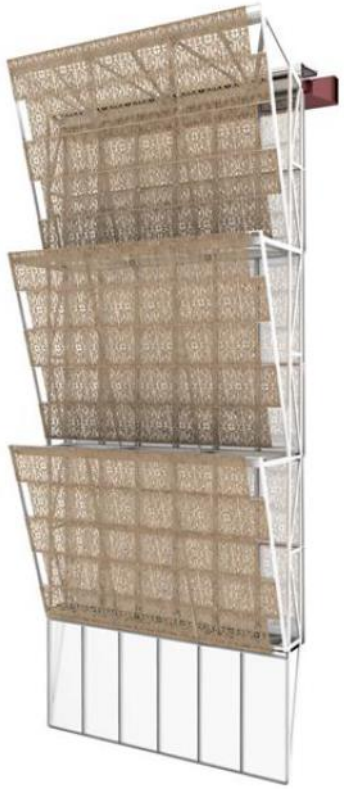


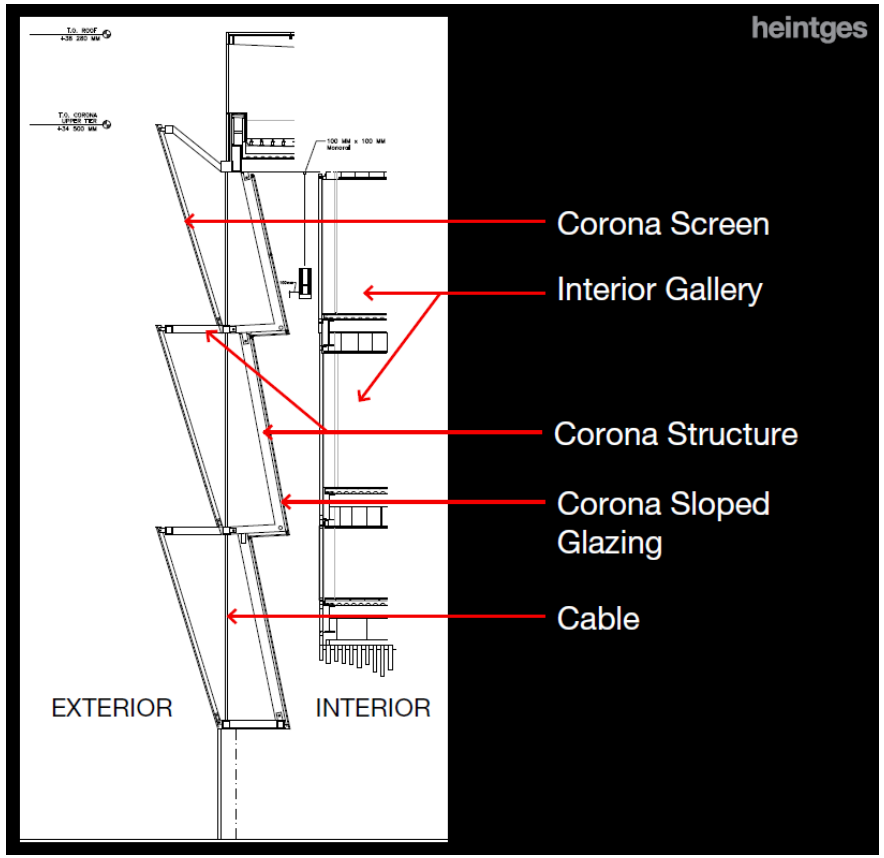
CONSTRUCTION: Design Assist for Exterior Enclosure

April 2012 - 2013

- Resulted in Changes in:
  - Corona
  - Structural Framing
  - Curtain Wall

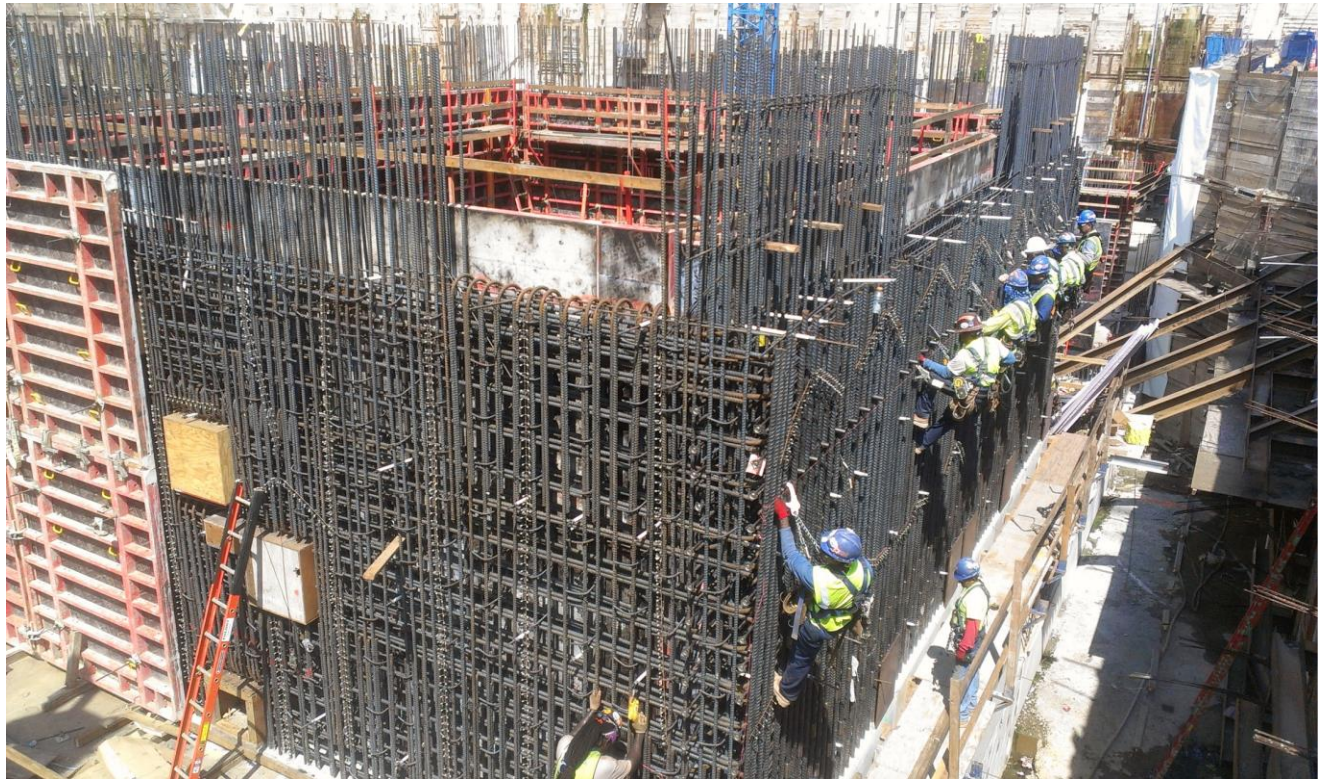






CONSTRUCTION: Deep Foundation Piles & Concrete and Vertical Transportation

June – September 2012



CONSTRUCTION: Excavation and Foundation Walls

2012-2013

Smithsonian Institution

CONSTRUCTION: Structural Steel and MEP

January – March 2013

CHALLENGE: Arrival of Large Artifacts

November2013

Smithsonian Institution

EXHIBITION DESIGN

2010 - 2014

Segregated Rail Car

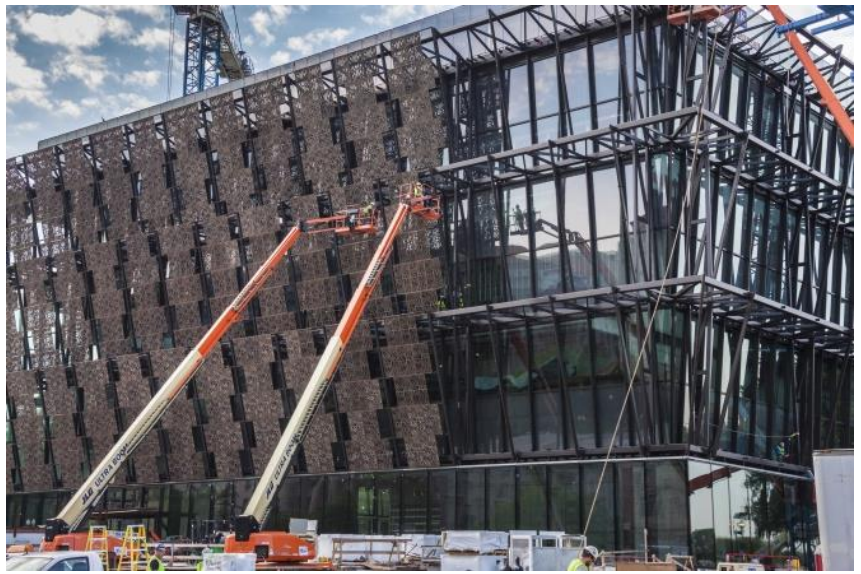
Military History

Civil War

Middle Passage

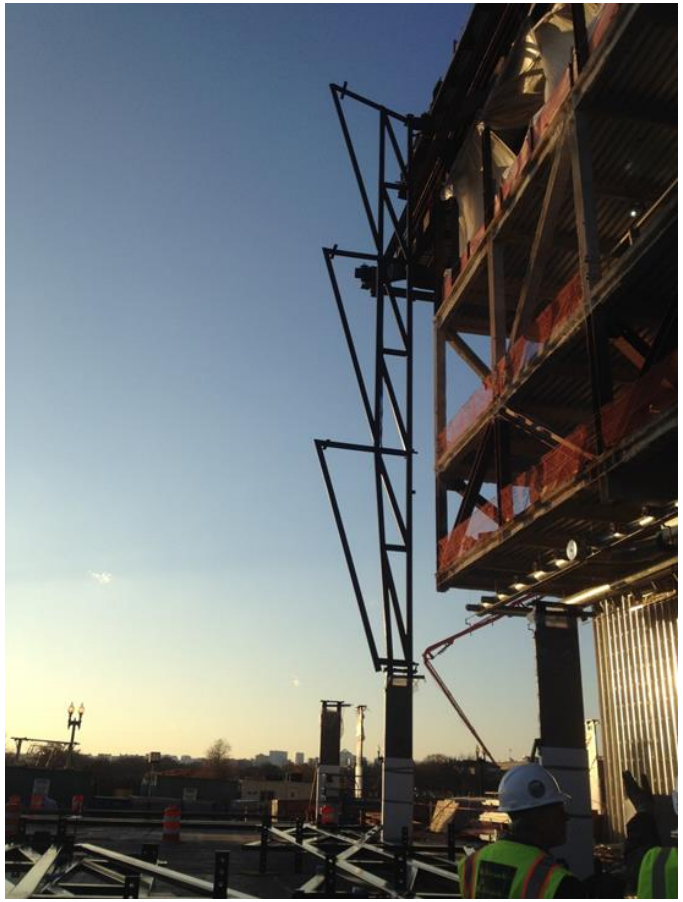
CONSTRUCTION: Corona Production and Finishing 2014-2016

CONSTRUCTION: Completion Exterior Enclosure
October 2016



CONSTRUCTION
2014 - 2016

Installation of Cooling Towers



First Vertical Truss, Dec 2014

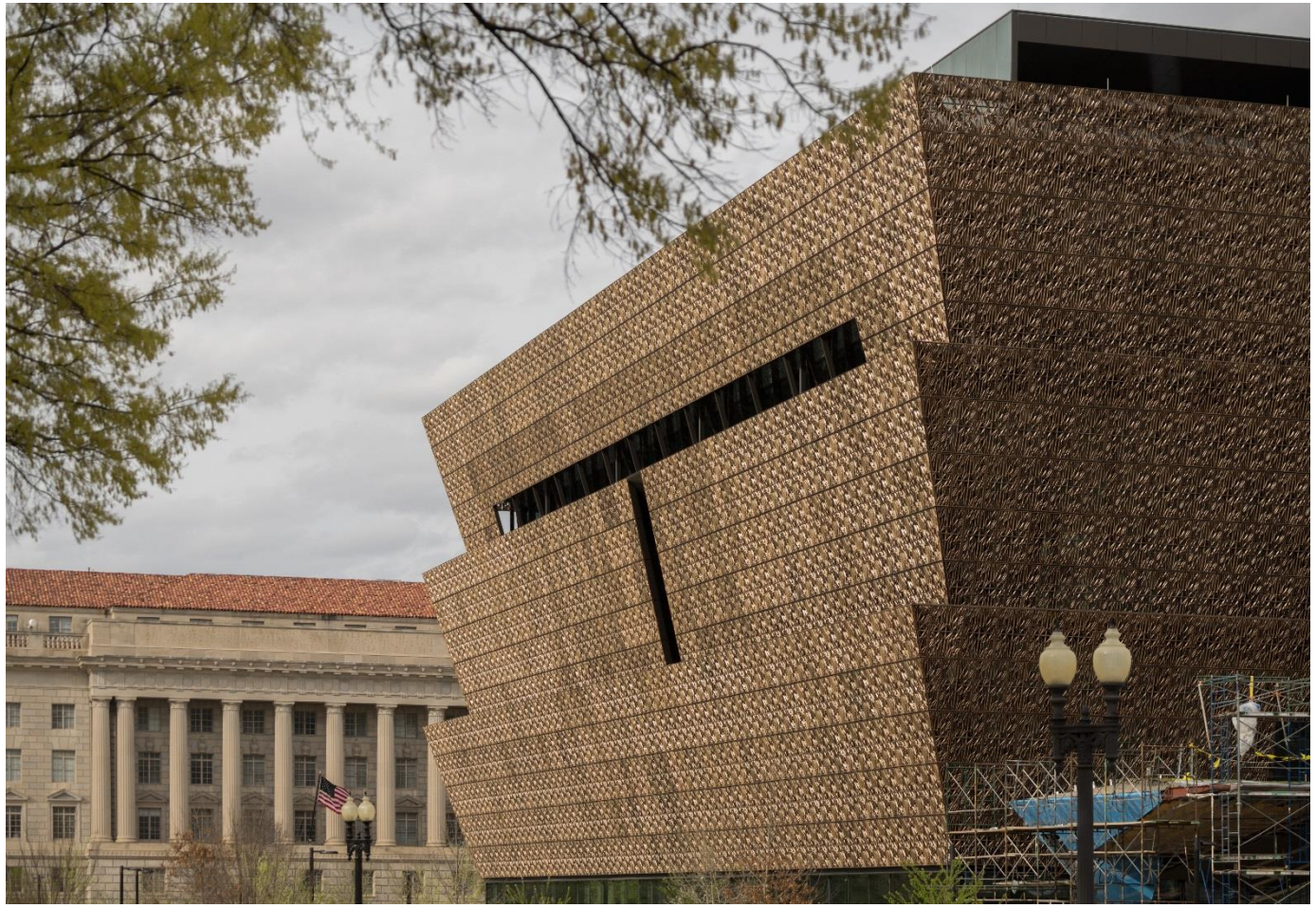
Smithsonian Institution

CONSTRUCTION: Porch Installation
2014 - 2016

CONSTRUCTION: Roof Installation
2014 - 2016

CONSTRUCTION: Panel Installation 2016

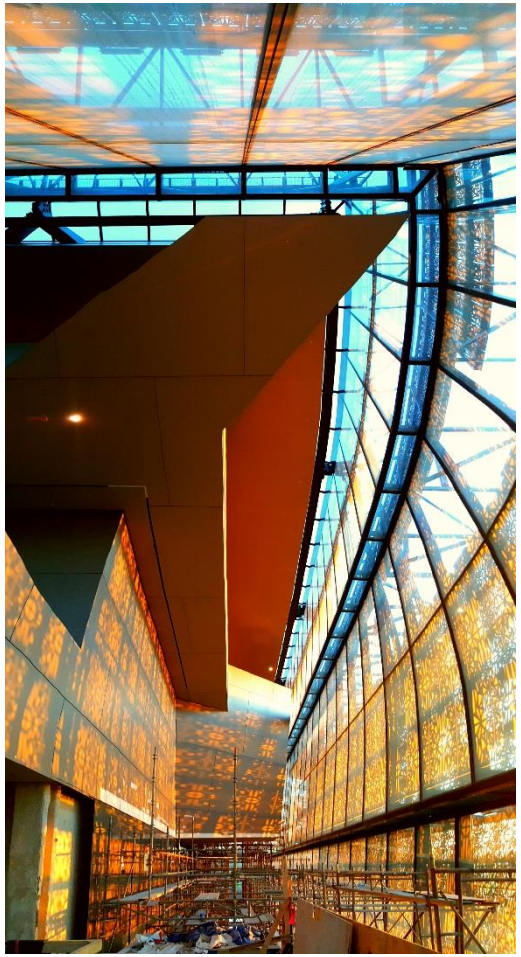
COMPLETION!
2016



COMPLETION!
2016

COMPLETION!
2016

COMPLETION!
2016



COMPLETION!
2016

Credits

Credits:

Design Team

Architect of Record: The Freelon Group
Architectural Team:
The Freelon Group, David Adjaye Associates, Davis Brody Bond with the SmithGroup
Structural Engineering: Robert Silman and Guy Nordenson Associates
MEP/FP Engineering: WSP Flack and Kurtz
Civil Engineering: Rummel Keppler & Kahl
Landscape Design: Gustafson Guthrie Nichol Ltd.
Cost Estimating: Faithful + Gould
Security: ARUP
Specifications: Construction Specifications
Blast/CBR/Perimeter Security: Weidlinger Associates
Sustainability: Rocky Mountain Institute
Acoustics/Audio-Visual/Telecommunications: Shen Milsem Wilke
Theatre/Multimedia: Fisher Dachs Associates
Vertical Transportation: Lerch Bates
Lighting: Fisher Marantz Stone
Food Service: Hopkins Food Service
Hardware: Erbschloe Consulting Services, Inc.
Façade: R. A. Heintges & Associates

Construction:

Clark/Smoot/Russell

Smithsonian Institution Project Team Leaders:
Design Management: Brenda Sanchez
Construction Management: Steven Christensen
Progran Executive: Jud McIntire

This Presentation:
Professional Photography: Alan Karchmer
Contributors: Brenda Sanchez, Jud McIntire, Sharon Park